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conditions, crowding out natural vegetation and disrupting food sources and habitats used by native wildlife, especially fish and wading birds.

At the dedication, Nicolás Gutiérrez, Governing Board Chair of the SFWMD, recognized the STA as yet another milestone in the journey to restore America's Everglades. "We continue to write the book when it comes to ecosystem restoration on such a grand scale as this. We are pioneers, which makes this such an exciting adventure," he said.



Top, left to right: State Sen. **Jeff Atwater**, then-DEP Sec. **David Struhs**, State Rep. **Gayle Harrell**, Executive Director **Henry Dean** and State Rep. **Richard Machek** observe a rotating pump assembly in the G-370 pump station. Bottom: At the ceremony, **Struhs** checked off the significant progress in phosphorus removal made by Everglades stormwater treatment areas.

Florida Senator Jeff Atwater also participated in the ceremony and reiterated the Legislature's commitment to clean up and restore the Everglades. He told the many engineers, planners, managers and construction crews in the audience, "We are sincerely grateful for what you have accomplished."

#### AN ENGINEERING MARVEL

This project is certainly an accomplishment. More than 11 million cubic yards of dirt and rock were moved in building 29 miles of canals and 31 miles of levees. Its two giant pump stations, G-370 and G-372, can push more than 4 billion gallons of water per day into the wetland. Excavation for each pump station was roughly a football field in size, 15 feet below sea level, and requiring 20,000 cubic yards of concrete and 500 miles of reinforcing steel to construct. The pumps are so large and powerful that one station could drain a residential swimming pool in only two seconds!

A secondary benefit provided by the constructed wetland is water storage. Its vast size reduces the need for discharging Lake Okeechobee water into Florida's fragile estuaries. This increases the District's options and operational flexibility in watershed management.

#### A LASTING LEGACY

STA-3/4 is one of five treatment wetlands built by the District as part of the 1994 Everglades Forever Act, which set into motion a vast effort to protect the Everglades ecosystem. Reducing phosphorus levels

discharged into the Everglades is an important part of this effort, and substantial progress has been made by the state of Florida and other stakeholders. Through the end of 2003, the treatment wetlands alone have removed more than 417 metric tons of phosphorus.

However, the STAs are part of a much larger effort under the Everglades Forever Act. Modified farming practices and improved residential and urban landscaping techniques – collectively called best management practices (or BMPs) – have also contributed significantly to lowering phosphorus levels. Participants in the various BMP programs have already prevented more than 1,100 tons of phosphorus from entering Everglades waters.

At the ceremony, District Executive Director Henry Dean said, "We are committed to leaving a lasting legacy for future generations. This is one of many steps toward honoring our pledge to protect and restore America's Everglades."

Anything that can be called "the world's largest" is a big step indeed.

## Chipping Away at Phosphorus Levels

### HOW DO WE MEASURE WATER QUALITY?

The South Florida Water Management District attracts a lot of attention for its efforts to remove excess phosphorus from Everglades-bound water and to help balance the mix of salt and fresh water in bays and estuaries. But how do we know if our efforts are working?

The first step is water quality monitoring. Conducted by numerous teams within the District's Environmental Monitoring and Assessment Department, water quality monitoring programs collect scientific data on water depth, flow rates, salinity, rainfall, and pesticide, mercury and phosphorus levels, to name a few. Some programs cover the entire 16-county area; others focus on a specific locale, such as Biscayne Bay. Strict federal and state quality control standards ensure the accuracy of the results, which are available to the public through the District's database, DBHydro, accessed through the main web site, ([www.sfwmd.gov](http://www.sfwmd.gov)).

The tools needed to do the monitoring vary with the task. Flow meters and depth gauges do what their names describe: measure flow and depth at various field locations. But what does an atomic emission spectrometer do? And how do you detect 10 parts per billion of anything?

That's the second step – water quality analysis. At the District's chemistry lab, high-tech instruments and skilled technicians analyze many hundreds of samples every week. For the third time in three years, the lab earned top marks in the U.S. Geological Survey's national assessment of laboratories, a testament to the quality control and quality assurance embraced by the staff.

Spectroscopy is the science behind many of the water quality tests. Light beams are used to precisely measure color levels in water samples that have been specially processed for analysis. Phosphorus samples are a pretty blue; the paler the color, the lower the level. Remarkably, these complex instruments can accurately detect phosphorus concentrations as low as 1 part per billion (ppb). That's comparable to a pinch of salt in 10 tons of potato chips!

## Other Everglades progress...

#### ■ Land acquisition surpasses 50 percent:

Slightly more than 400,000 acres are needed for the Comprehensive Everglades Restoration Plan (CERP). A total of 205,179 acres are now in hand (51 percent) – an impressive achievement. Even more impressive was the District's ability to spend less than half the expected amount for these lands.

■ **Southern Golden Gate Estates Hydrologic Restoration:** Field crews continue fill-in of the Prairie Canal, helping to restore local wetlands and historic water flows in Southwest Florida near Naples. Study teams have evaluated numerous restoration alternatives for the entire area, and a recommended plan will be presented for public comment and review in April.

■ **Ten Mile Creek Critical Restoration Project:** Construction is under way and on schedule for this project, which includes an above-ground reservoir and pump station designed to manage stormwater flows into the St. Lucie Estuary. Land is being cleared for levee earthwork construction, and wells are now being prepared for the dewatering process, an essential step before pump station construction.

